

NEW SPECIES AND RECORDS OF CADDISFLIES  
(INSECTA: TRICHOPTERA) FROM THE LESSER ANTILLES,  
WITH SPECIAL REFERENCE TO GRENADA

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ABSTRACT

Twenty-two species of caddisflies are now known from the island of Grenada. Of these, *Xiphocentron* (*Antillotrichia*) *lobiferum*, n. sp., *Bredinia* *appendiculata*, n. sp., *Neotrichia* *nesiotes*, n. sp., *Amphoropsyche* *woodruffi*, n. sp., and *Helicopsyche* *grenadensis*, n. sp. are described herein. Additional records and descriptions are given for other species from the islands of Guadeloupe, Dominica, St. Lucia, and St. Vincent. *Chimarra* *diannae*, n. sp., is described from St. Lucia and *Ochrotrichia* (*M.*) *rawlinsi*, n. sp., from Dominica. A list of all the species known from the Lesser Antilles is given.

INTRODUCTION

The first caddisfly recorded from the Lesser Antilles was *Leptonema albovirens* from St. Vincent (Mosely, 1933), a species that is widespread in central and northern South America. The second species, *Polycentropus insularis* (Banks, 1938), was described from Grenada shortly thereafter. The islands were then ignored until 1968 when Flint reported on major collections made on Dominica, St. Lucia, and Grenada. Flint's study and other published records raised the number of known species to 36 on Dominica, 11 on St. Lucia, 12 on Grenada, three on Guadeloupe and one on St. Vincent. The next major thrusts were several primarily limnological investigations, the first by Harrison and Rankin on St. Vincent (1976), the second by Starmuhlner and Therezien primarily on Guadeloupe with stops on Dominica and Martinique. The Trichoptera collected by this latter expedition were studied by Malicky (1980, 1983, 1987), and brought the species total known from Guadeloupe to 21 and added the first three for Martinique. Botosaneanu made expeditions to Martinique in 1986, and to Curaçao, St. Vincent, Martinique, and Barbados in 1989, resulting in a series of papers (1988, 1989, 1990a, 1990b) which greatly increased knowledge of caddisflies from these islands. Recent collections from Grenada, St. Vincent, St. Lucia, Dominica, and Guadeloupe, listed below, are reported herein.

R. E. Woodruff, Florida Department of Agriculture, led a major expedition to Grenada in 1990 resulting in 36 samples of Trichoptera. A blacklight trap was the method most often used to make these collections, but a few malaise trap samples were also obtained. Most of the material was obtained from a permanent site located at the Agricultural Laboratory at Mirabeau, Parish St. Andrews. This collection is deposited primarily in the Florida State Collection of Arthropods (FSCA), with specimens at the Carnegie Museum of Natural History (CMNH) and the National Museum of Natural History (NMNH).

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An expedition by J. E. Rawlins and S. A. Thompson from the Carnegie Museum of Natural History in 1991 resulted in small but valuable collections of Trichoptera from St. Lucia and Dominica. Among these were a new species of *Ochrotrichia* (*Metrichia*) from Dominica and a new *Helicopsyche* record from St. Lucia. This material is deposited at the Carnegie Museum.

Two other small collections, preserved at the National Museum of Natural History, are also reported upon in this paper. One from Grand Etang, Grenada, made by E. L. Todd, Systematic Entomology Laboratory, U.S. Department of Agriculture, produced the first record of the genus *Oecetis* from the island. On the same trip Todd and C. L. de Freitas collected on St. Vincent. Most of the species they took on that island were reported by Botosaneanu (1990a), and one more species record is added herein. The second collection was made on St. Lucia and Dominica by W. N. Mathis, Department of Entomology, National Museum of Natural History.

The accompanying table summarizes the results of this collecting activity. Between Guadeloupe and Grenada, a total of 65 species have now been identified. An identification to generic level, usually based on females or larvae, is counted as one species for a particular island until the first species record is made (unless the record was clearly for a second species from the island), at which point the generic record is dropped. The list of species known from Grenada is increased from 12 to 22, which compares well to the numbers known on other Lesser Antillean islands: Guadeloupe, 22; Dominica, 37; Martinique, 20; St. Lucia, 13; St. Vincent, 15; Barbados, 2; Mustique, 1 (Table 1). However, a number of genera that are widely distributed in the Lesser Antilles are still unknown from Grenada, and their inevitable discovery will further increase the number. Some genera noticeably absent are: *Cernotina*, *Alisotrichia*, and *Ochrotrichia* (*Metrichia*). Other genera, such as *Protoptila*, *Austrotinodes*, *Atanatolica*, and *Phylloicus*, are known only from a single or a few islands and may not exist on all islands. Most of these genera have adults active in daytime that rarely appear in light trap collections, which probably accounts for their sporadic records.

#### SYSTEMATICS

##### *Wormaldia planae* Ross and King

Described originally from Mexico, this species has been reported from Guatemala, Panama, Columbia, Venezuela, Brazil, Ecuador, Trinidad, Tobago, and Grenada (two miles west of Grand Etang) (Flint, 1968, 1991). On the basis of these collections, *W. planae* is infrequently encountered on the island of Grenada.

*Material.*—GRENADA, PARISH ST. ANDREWS: Mirabeau Agricultural Laboratory, 1 Feb. 1990, A. Thomas, 1 male; same, 23 Feb. 1990, R. E. Woodruff, 1 male; same, 12 Oct. 1990, 1 male; road end at Mt. St. Catherine, 22 Feb. 1990, R. E. Woodruff, et al., 5 males and 3 females; PARISH ST. JOHNS: Concord Falls, 20 Feb. 1990, R. E. Woodruff, et al., 4 males and 5 females (all FSCA).

##### *Chimarra diannae*, new species

Fig. 1–3

*Diagnosis.*—This species is similar to *C. dominicana* but differs in the structure of the male genitalia, especially the tenth tergites and claspers. In *C. dominicana* the dorsal branch of the tenth tergum is short, tapered and straight, whereas in *C. diannae* it is proportionately longer, terete, and arched. The ventral branch of the tenth tergum in *C. dominicana* bears two strong, laterally directed teeth at its

Table 1.—Distribution of the Trichoptera recorded from the Lesser Antilles. (GU = Guadeloupe, DO = Dominica, MA = Martinique, SL = St. Lucia, SV = St. Vincent, MU = Mustique, GR = Grenada, BA = Barbados)

	GU	DO	MA	SL	SV	MU	GR	BA
<i>Protoptila dominicensis</i>	X							
<i>Wormaldia planae</i>					X		X	
<i>Chimarra dominicana</i>	X	X	X					
<i>Chimarra diannae</i>				X				
<i>Chimarra antillina</i>	X	X	X	X				
<i>Chimarra caribea</i>							X	
<i>Chimarra hairouna</i>					X			
<i>Xiphocentron fuscum</i>		X		?				
<i>Xiphocentron parentum</i>			X					
<i>Xiphocentron albolineatum</i>		X			X			
<i>Xiphocentron lobiferum</i>							X	
<i>Austrotinodes madininae</i>			X					
<i>Cernotina lutea</i>		X						
<i>Cernotina cadeti</i>				X				
<i>Cernotina</i> sp.	X							
<i>Polyplectropus bredini</i>	X	X	X	X			X	
<i>Polycentropus insularis</i>		X					X	
<i>Smicridea cariba</i>		X						
<i>Smicridea simmonsii</i>			X	X	X			
<i>Smicridea grenadensis</i>							X	
<i>Smicridea astarte</i>	X							
<i>Smicridea palifera</i>							X	
<i>Smicridea</i> sp.					X			
<i>Leptonema archboldi</i>		X	X					
<i>Leptonema albovirens</i>					X		X	
<i>Leucotrichia sarita</i>							X	
<i>Leucotrichia</i> sp.			X					
<i>Zumatrichia antillensis</i>	X	X	X	X	X		X	
<i>Zumatrichia anomaloptera</i>	X	X	X	X	X		X	
<i>Zumatrichia lezarda</i>	X							
<i>Alisotrichia orophila</i>		X	X					
<i>Alisotrichia timouchela</i>			X		X			
<i>Alisotrichia lobata</i>		X						
<i>Alisotrichia dominicensis</i>		X	X					
<i>Brysopteryx septempunctata</i>		X						
<i>Neotrichia iridescens</i>	X	X	X	X				
<i>Neotrichia corniculans</i>		X						
<i>Neotrichia tauricornis</i>	X		X	X			X	
<i>Neotrichia nesiotis</i>							X	
<i>Neotrichia pequenita</i>								X
<i>Neotrichia</i> sp.					X			
<i>Bredinia dominicensis</i>		X						
<i>Bredinia appendiculata</i>							X	
<i>Oxyethira janella</i>	X	X	X	X	X		X	X
<i>Oxyethira azteca</i>							X	
<i>Oxyethira arizonensis</i>		X	X					
<i>Oxyethira tega</i>	X	X						



Table 1.—Continued.

	GU	DO	MA	SL	SV	MU	GR	BA
<i>Hydroptila martorelli</i>	X							
<i>Hydroptila antilliarum</i>	X	X	X	X				
<i>Hydroptila grenadensis</i>							X	
<i>Hydroptila</i> sp.					X			
<i>Ochrotrichia</i> (O.) <i>brayi</i>		X						
<i>Ochrotrichia</i> (O.) <i>ponta</i>		X	X		X		X	
<i>Ochrotrichia</i> (O.) <i>spinosissima</i>		X						
<i>Ochrotrichia</i> (O.) sp.	X							
<i>Ochrotrichia</i> (M.) <i>campana</i>		X						
<i>Ochrotrichia</i> (M.) <i>similis</i>	X	X						
<i>Ochrotrichia</i> (M.) <i>exclamationis</i>		X						
<i>Ochrotrichia</i> (M.) <i>rawlinsi</i>		X						
<i>Oecetis pratti</i>		X					X	
<i>Oecetis knutsoni</i>	X							
<i>Atanatolica dominicana</i>	X	X						
<i>Atanatolica</i> sp.					X			
<i>Amphoropsyche insularis</i>	X	X						
<i>Amphoropsyche janstockiana</i>					X			
<i>Amphoropsyche woodruffi</i>							X	
<i>Amphoropsyche</i> sp.						X		
<i>Phylloicus monticolus</i>		X						
<i>Phylloicus</i> sp.	X							
<i>Helicopsyche apicauda</i>		X						
<i>Helicopsyche guadeloupensis</i>	X	X	X	X				
<i>Helicopsyche margaritensis</i>							X	
<i>Helicopsyche grenadensis</i>							X	
Totals	22	37	20	13	15	1	22	2

apex, which are absent in *C. diannae*. The spine at the tip of the clasper in *C. dominicana* is very long and slender, almost hairlike, whereas in *C. diannae* it is short and toothlike.

*Description*.—Male: Length of forewing, 4 mm. Color fuscous. Forewing lacking bulla in radial system; hindwing with three branches to Rs and two to M. Male genitalia: Eighth segment with sternum narrow, tergum broader dorsally with dorsolateral angles developed into short, sharp points. Ninth segment with anterior margin slightly widened laterally, posterior margin vertical, dorsum developed into a flat lobe over base of tenth tergum; posteroventral process short, thumblike. Cercus thin, twisted dorsolaterad, in posterior aspect large, ovate. Tenth tergum divided into distinct dorsal and ventral branches: dorsal branches widely separated mesally, nearly as long as ventral branch, curved dorsally in lateral aspect, terete, slightly enlarged at apex and with several sensillae; ventral branches platelike, united basally, heavily sclerotized ventrally and apically. Clasper elongate, slender, curved mesad apically; apex with a darkened projection directed dorsomesad, about as long as broad basally in dorsal aspect. Phallus inflated basally (portion now lost); internally with a basal ring attached to an elongate sclerite widened apicad, two elongate spines much enlarged basad, and a pair of small, dark spines apicoventrally at tip.

*Type specimen*.—Holotype, male (NMNH): ST. LUCIA, QUARTER OF SOUFRIERE, Fond St. Jacques (13°50'N, 61°02'W), 13–14 June 1991, W. N. and D. Mathis.

*Etymology*.—Named in honor of Mrs. Dianne Mathis, co-collector of this new species.

*Remarks*.—This is the sister species of *C. dominicana*, which was originally



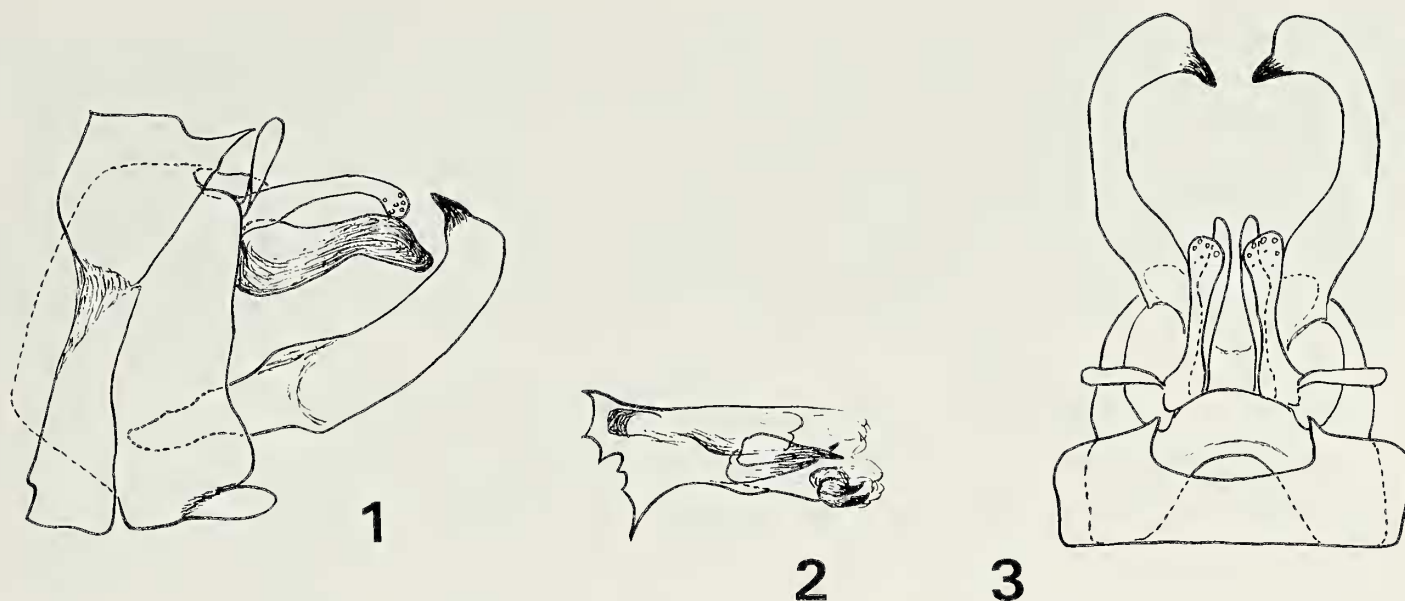


Fig. 1–3.—*Chimarra diannae*, n. sp., male genitalia: 1, left lateral view; 2, phallus, left lateral view; 3, dorsal view.

described from higher elevations on Dominica, but since has been recorded from Guadeloupe and Martinique (Botosaneanu, 1988, 1990a; Malicky, 1983).

#### *Chimarra caribea* Flint

This species, which is similar to *C. duckworthi* Flint, was reported and described by Flint (1968) from Grenada. The holotype was collected two miles west of Grand Etang. Based on the present collections, *C. caribea* is a frequently collected caddisfly in Grenada.

*Material*.—GRENADA, PARISH ST. ANDREWS: Mirabeau Agriculture Laboratory, 28 Jan. 1990, J. Telesford, 3 males and 2 females; same, 29 Jan. 1990, A. Thomas, J. Telesford, 2 males and 2 females; same, 31 Jan. 1990, M. Thomas, 4 males; same, 1 Feb. 1990, A. Thomas, 2 males; same, 19 Feb. 1990, R. E. Woodruff, 4 males and 5 females; same, 21 Feb. 1990, R. E. Woodruff, 6 males, 2 females; same, 22 Feb. 1990, R. E. Woodruff, 3 males and 4 females; same, 23 Feb. 1990, R. E. Woodruff, 1 male and 2 females; same, 24 Feb. 1990, R. E. Woodruff, 3 males and 1 female; same, 4 March 1990, B. Williams, 1 female; same, 6 March 1990, H. Thomas, 1 male and 3 females; same, 13 March 1990, J. Telesford, 2 males and 1 female; same, 15 May 1990, A. Thomas, 4 males and 1 female; same, 8 June 1990, J. Telesford, 3 males; same, 27 Sept. 1990, R. E. Woodruff, 1 male; same, 12 Oct. 1990, R. E. Woodruff, 1 female; Balthazar Estate, 12 June 1990, J. H. Frank, A. Thomas, 4 females; Balthazar River, Dennis Noel Farm, ca. 3 mi SW Grenville, 25 Feb. 1990, R. E. Woodruff, 1 male and 1 female; road end at Mt. St. Catherine, 22 Feb. 1990, R. E. Woodruff et al., 1 female; Windsor Estate, 6 March 1990, R. E. Woodruff et al., 1 female; Lake Grand Etang, TV Tower, 580 meter elevation, 26 Sept. 1990, R. E. Woodruff et al., 2 males and 2 females; Clabony, 12 Oct. 1990, R. E. Woodruff, A. Thomas, 1 male and 3 females. PARISH ST. JOHNS: Concord Falls, 20 Feb. 1990, R. E. Woodruff et al., 17 males and 36 females; Black Bay, 26 Feb. 1990, R. E. Woodruff et al., 1 male; Clozier, 27 Sept. 1990, R. E. Woodruff et al., 3 males and 6 females. PARISH ST. MARKS: Diamond Estate, 9 Oct. 1990, R. E. Woodruff et al., 1 female (all in FSCA).

#### *Xiphocentron (Antillotrichia) fuscum* Flint

This species, which was originally described by Flint (1968) from several sites around Pont Casse, Dominica, has not been recorded since. Another male has recently been collected by W. N. and D. Mathis from the same area. A female was also taken on St. Lucia, where only larvae were recorded previously (Flint, 1968). In size and color it is in complete agreement with the Dominican *X. fuscum*, to which it is provisionally referred.

*Material*.—DOMINICA, PARISH ST. PAUL, Pont Casse (15°22'N, 61°21'W), 18 June 1991, W.

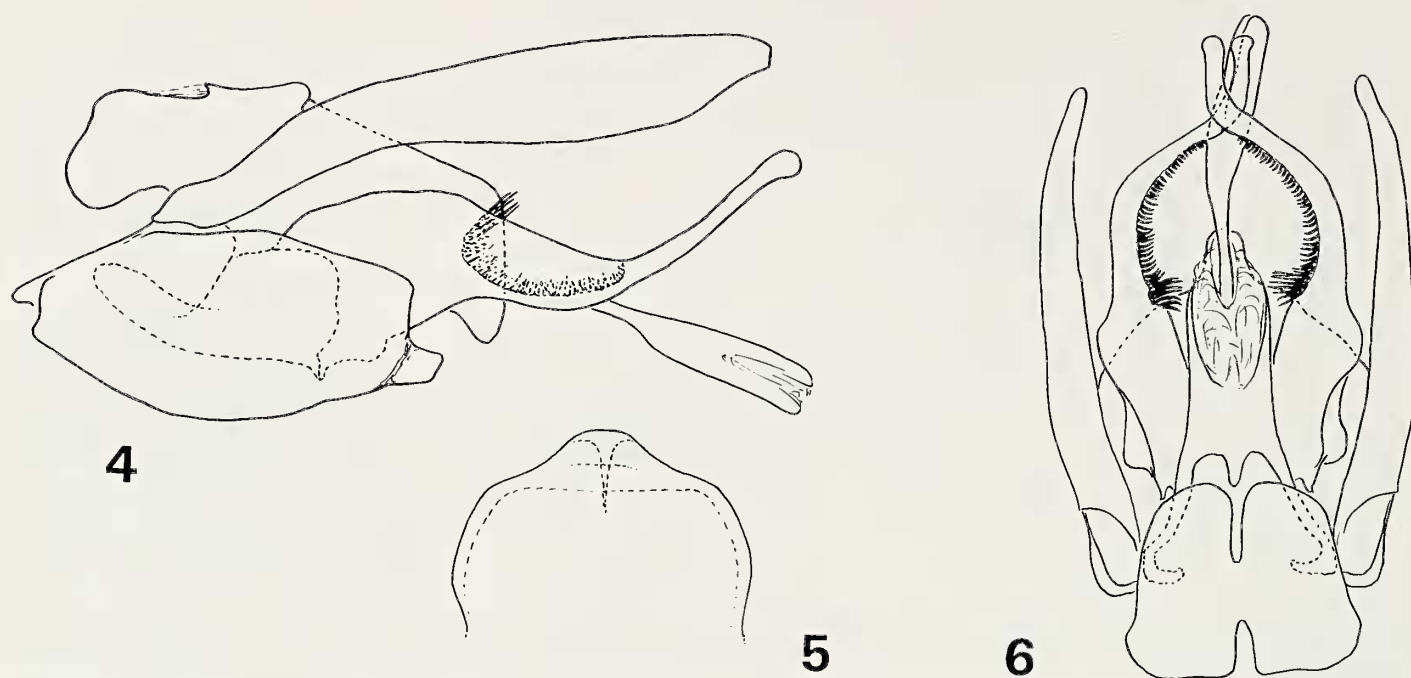


Fig. 4–6.—*Xiphocentron (Antillotrichia) lobiferum*, n. sp., male genitalia: 4, left lateral view; 5, posterior margin of ninth sternum, ventral view; 6, dorsal view.

N., D. Mathis, 1 male. ST. LUCIA, QUARTER OF SOUFRIERE, Fond St. Jacques (13°50'N, 61°02'W), 13–14 June 1991, W. N. and D. Mathis, 1 female (all in NMNH).

*Xiphocentron (Antillotrichia) lobiferum*, new species

Fig. 4–6

**Diagnosis.**—Distinguished by the shape of ninth sternum with posterior margin bearing a knob-like projection and by the posterior and anterior margins of ninth tergum with deep mesal incisions.

**Description.**—Male: Length of forewing, 3.5 mm. Color in alcohol fuscous, immaculate. Apical spur of hindleg almost  $\frac{1}{2}$  length of basal tarsal segment. Fifth sternum with anterior margin modified, glandular, with dorsal angle produced into an erect process  $\frac{2}{3}$  length of sternum. Male genitalia: Ninth sternum with anterolateral process short, rounded, posterior margin produced mesally into a knob-like lobe in lateral aspect; tergum with anterior margin divided mesally by a deep excision, posterior margin similarly divided by an even deeper excision, lateral lobes broad, rounded laterad. Cercus almost perfectly straight, slightly widened subapically, about seven times as long as wide in lateral aspect. Tenth tergum elongate, tip decurved, sclerotized dorsomesally. Clasper long, tip curved dorsally and mesally, terete, broader basally with inner surface bearing many short, dark setae, with a larger cluster of these setae at base of row. Phallus with a very long, slender, tubular basal portion, apex slightly inflated, divided on one side.

**Type specimen.**—Holotype, male (FSCA); GRENADA, PARISH ST. PATRICK: Plains, 7 April 1990, A. Thomas (malaise trap).

**Etymology.**—Latin: “bearing lobes,” referring to the distinctive ninth sternum.

**Remarks.**—This species is closely related to *X. parentum* Botosaneanu and *X. fuscum* Flint. When the male genitalia of all three species are compared side by side, many differences become apparent, which may not be clear in published illustrations. The fifth sternum of all three bears a glandular development along the anterior margin, ending in a projection at the dorsal angle. In *X. fuscum* and *X. lobiferum* this projection is erect and about  $\frac{2}{3}$  as long as the length of the segment, but in *X. parentum* it is a very small knob hardly as high as long. The posterior margin of the ninth sternum of *X. lobiferum* bears a distinct mesal



projection, whereas in the other two species it is perfectly straight. The ninth tergum is different in all three species: in lateral aspect the anterior margin is square in *X. fuscum*, in the other two the ventral angle is rounded and produced ventrad. In dorsal aspect the posterior margin is deeply divided mesally with broad lateral lobes in *X. lobiferum*, in the other two it is shallowly notched mesally and the lateral lobes differently shaped. The anterior margin is also different: deeply divided in *X. lobiferum*, straight in *X. fuscum*, and slightly notched in *X. parentum*.

*Xiphocentron (Antillotrichia) albolineatum* Flint

This is the first record of this species outside Dominica, its type locality.

*Material*.—ST. VINCENT, PARISH ST. PATRICK, Belleisle, 12 Nov. 1975, E. L. Todd, 1 male (NMNH).

*Polycentropus insularis* Banks

Originally described from Grand Etang, Grenada, this species also has been recorded from Dominica (Flint, 1968). This record is the first collection from Grenada since the type collection in 1910; interestingly, both are from the same site.

*Material*.—GRENADA, PARISH ST. ANDREWS: Grand Etang, 23 Oct.–1 Nov. 1975, E. L. Todd, 3 females (NMNH).

*Smicridea grenadensis* Flint

This species is known only from Grenada. The holotype was collected near Grand Etang.

*Material*.—GRENADA, PARISH ST. ANDREWS: Clabony, 12 Oct. 1990, R. E. Woodruff, A. Thomas, 1 male and 1 female. PARISH ST. JOHNS: Concord Falls, 20 Feb. 1990, R. E. Woodruff et al., 2 males and 2 females (all in FSCA).

*Smicridea palifera* Flint

This is a new record for the Island of Grenada. The species was previously known from a number of localities in Venezuela.

*Material*.—GRENADA, PARISH ST. ANDREWS: Mirabeau Agricultural Station, 28 Jan. 1990, J. Telesford, 1 male; Pearls Airport Area, 460 meters behind beach, 8 March 1990, R. E. Woodruff et al., 4 males (all in FSCA).

*Smicridea (S.) simmonsii* Flint

The identity of this species, originally described from St. Lucia, was recently clarified by Botosaneanu (1990a). It is now also known from Martinique and St. Vincent. The acquisition of three specimens, pinned in the field, allows us to describe the appearance of the species from the type-locality island. The basic color is fuscous, with creamy-white markings. The hair on the front and dorsum of the head and mesally on the mesonotum is pale. The forewings have a broad and somewhat diffuse transverse band from the stigma most of the way across the wing, and a diffuse longitudinal band over the anal cells. The legs, except for the hind tibiae and tarsi which are fuscous, are stramineous. This coloration is basically the same as that described by Flint and Denning (1989) for specimens from St. Vincent (under the name *Smicridea aurimacula*). The overall effect, however, is quite different. The St. Lucian examples are darker and faintly marked



with cream-colored hair, whereas the marking of the St. Vincent material is much more intensely golden and nearly covers the forewing leaving only a small dark mark centrally. In spite of this, the basic pattern is the same, differing only in degree of development. The male genitalia are the same.

*Material.*—ST. LUCIA, QUARTER OF SOUFRIERE, Fond St. Jacques (13°50'N, 61°02'W), 13–14 June 1991, W. N. and D. Mathis, 3 males (NMNH).

*Leptonema albovirens* (Walker)

This is a very common species ranging from the USA (Texas) and Mexico across Central America, Columbia, and Venezuela and up the Lesser Antilles at least as far as St. Vincent (Flint et al., 1987). It was reported from Grenada by Flint (1968).

*Material.*—GRENADA, PARISH ST. ANDREWS: Mirabeau Agricultural Laboratory, 28 Jan. 1990, J. Telesford, 6 females; same, 29 Jan. 1990, A. Thomas, J. Telesford, 4 males and 12 females; same, 31 Jan. 1990, M. Thomas, J. Telesford, 1 male and 3 females; same, 1 Feb. 1990, A. Thomas, 1 male and 7 females; same, 19 Feb. 1990, R. E. Woodruff, 2 females; same, 21 Feb. 1990, R. E. Woodruff, 1 male and 1 female; same, 22 Feb. 1990, R. E. Woodruff, 2 females; same, 23 Feb. 1990, R. E. Woodruff, 1 female; same, 6 March 1990, A. Thomas, 2 males and 7 females; same, 13 March 1990, J. Telesford, 1 female; same, 8 June 1990, J. Telesford, 1 male and 3 females; same, 27 Sept. 1990, R. E. Woodruff, 3 females; same, 12 Oct. 1990, R. E. Woodruff, 1 male and 3 females; Balthazar Estate, 1 June 1990, J. H. Frank, A. Thomas, 2 males and 13 females; same, 12 June 1990, 1 male and 1 female; same, 27 Sept. 1990, R. E. Woodruff, 3 females; Windsor Estate, 6 March 1990, R. E. Woodruff, et al., 2 females; Pearls Airport Area, 500 yds behind beach, 8 March 1990, R. E. Woodruff, et al., 2 females; Lake Grand Etang, TV Tower, 580 meters elevation, 26 Sept. 1990, R. E. Woodruff et al., 5 females; Clabony, 12 Oct. 1990, R. E. Woodruff, A. Thomas, 5 males and 9 females. PARISH ST. JOHNS: Black Bay, 26 Feb. 1990, R. E. Woodruff et al., 1 female; Clozier, 27 Sept. 1990, R. E. Woodruff et al., 1 female. PARISH ST. DAVID: Crocha Estate, 5 Oct. 1990, R. E. Woodruff et al., 1 male and 1 female. PARISH ST. MARKS: Diamond Estate, 9 Oct. 1990, R. E. Woodruff et al., 1 female (all in FSCA); Grand Etang, 23 Oct.–1 Nov. 1975, E. L. Todd, 1 male and 8 females (NMNH).

*Leucotrichia sarita* Ross

This is a widely distributed species which ranges from Texas to Costa Rica. It was reported from Grenada by Flint (1968).

*Material.*—GRENADA, PARISH ST. ANDREWS: Mirabeau Agricultural Laboratory, 8 June 1990, J. Telesford, 1 male; Balthazar River, Dennis Noel Farm, ca. 3 mi. SW Grenville, 25 Feb. 1990, R. E. Woodruff, 1 male; Windsor Estate, 6 March 1990, R. E. Woodruff et al., 1 male. PARISH ST. JOHNS: Black Bay, 26 Feb. 1990, R. E. Woodruff et al., 1 male (all in FSCA).

*Zumatrichia antilliensis* Flint

This species is captured very commonly in light traps on Grenada. Only males were identified and counted.

*Material.*—GRENADA, PARISH ST. ANDREWS: Mirabeau Agricultural Laboratory, 28 Jan. 1990, J. Telesford, 4 males; same, 29 Jan. 1990, A. Thomas, J. Telesford, 2 males; same, 31 Jan. 1990, M. Thomas, J. Telesford, 3 males; same, 1 Feb. 1990, A. Thomas, 3 males; same, 19 Feb. 1990, R. E. Woodruff, 10 males; same, 23 Feb. 1990, R. E. Woodruff, 6 males; same, 24 Feb. 1990, R. E. Woodruff, 4 males; same, 4 March 1990, B. Williams, 6 males; same, 6 March 1990, A. Thomas, 21 males; same, 13 March 1990, 8 males; same, 15 May 1990, A. Thomas, 6 males; same, 8 June 1990, 13 males; same, 27 Sept. 1990, R. E. Woodruff, 4 males; same, 3 Oct. 1990, R. E. Woodruff, 2 males; Balthazar Estate, 1 June 1990, J. H. Frank, A. Thomas, 47 males; same, 12 June 1990, 11 males; Balthazar River, Dennis Noel Farm, ca. 3 mi SW Grenville, 25 Feb. 1990, R. E. Woodruff, 3 males; Windsor Estate, 6 March 1990, R. E. Woodruff et al., 16 males. PARISH ST. JOHNS: Clozier, 27 Sept. 1990, R. E. Woodruff et al., 1 male; Grenville Vale, 3 Oct. 1990, R. E. Woodruff et al., 1 male; Black Bay, 26 Feb. 1990, R. E. Woodruff et al., 3 males (all in FSCA).



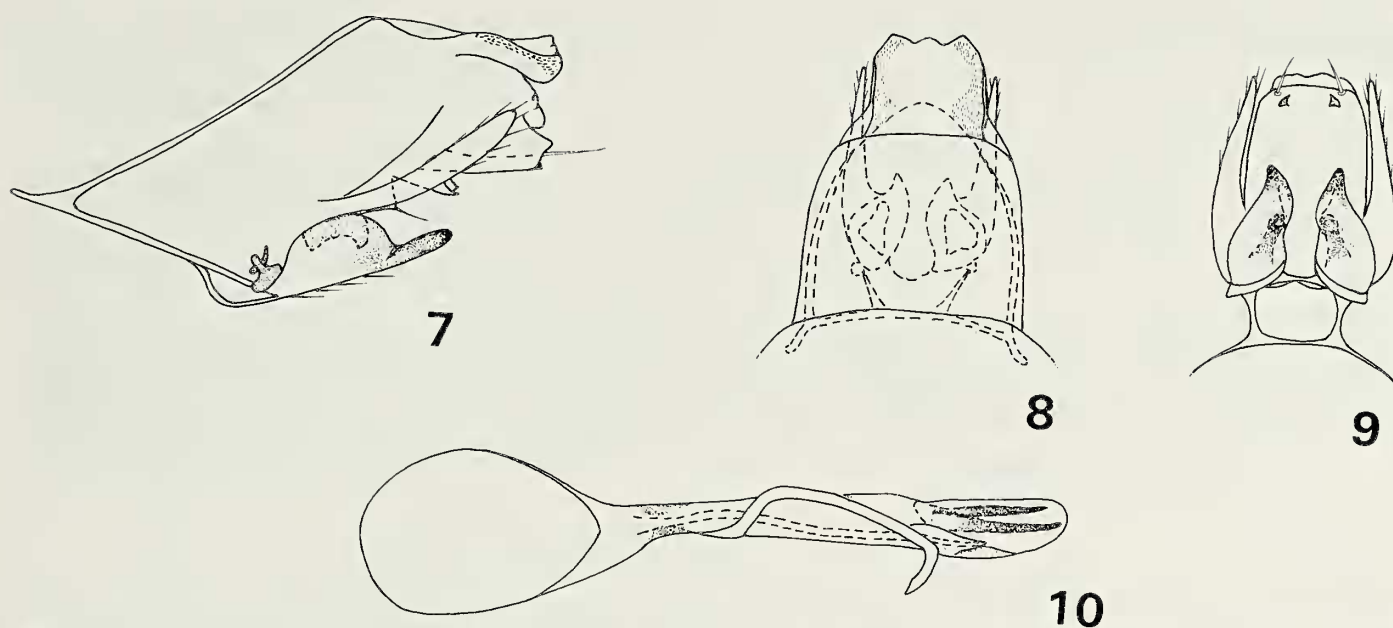


Fig. 7–10.—*Neotrichia nesiotes*, n. sp., male genitalia: 7, left lateral view; 8, dorsal view; 9, ventral view; 10, phallus, dorsal view.

### *Zumatrichia anomaloptera* Flint

This species and *Z. antilliensis* Flint are among the most common Trichoptera on Grenada, and often fly together. Only males were identified and counted.

**Material.**—GRENADA, PARISH ST. ANDREWS: Mirabeau Agricultural Laboratory, 6 Jan. 1990, A. Thomas, (malaise trap), 1 male; same, 28 Jan. 1990, J. Telesford, 7 males; same, 29 Jan. 1990, A. Thomas, J. Telesford, 2 males; same, 31 Jan. 1990, M. Thomas, J. Telesford, 4 males; same, 1 Feb. 1990, A. Thomas, 3 males; same, 31 Jan. 1990, A. Thomas, 2 males; same, 19 Feb. 1990, R. E. Woodruff, 7 males; same, 22 Feb. 1990, R. E. Woodruff, 5 males; same, 23 Feb. 1990, R. E. Woodruff, 2 males; same, 6 March 1990, H. Thomas, 10 males; same, 13 March 1990, J. Telesford, 14 males; same, 6 May 1990, A. Thomas, (malaise trap), 5 males; same, 15 May 1990, A. Thomas, 25 males; same, 8 June 1990, J. Telesford, 87 males; same, 27 Sept. 1990, R. E. Woodruff, 2 males; same, 3 Oct. 1990, R. E. Woodruff, 2 males; same, 12 Oct. 1990, R. E. Woodruff, 2 males; Balthazar Estate, 1 June 1990, J. H. Frank, A. Thomas, 63 males; same, 12 June 1990, 44 males. PARISH ST. JOHNS: Grenville Vale, 3 Oct. 1990, R. E. Woodruff et al., 4 males; Black Bay, 26 Feb. 1990, R. E. Woodruff et al., 3 males (all in FSCA).

### *Neotrichia nesiotes*, new species

Fig. 7–10

**Diagnosis.**—Distinguished by the shape of the subgenital plate of which the posterior tip is emarginate in lateral view and rounded in ventral view, by the narrow clasper with rounded apex, and by the phallus possessing two heavy, internal spines.

**Description.**—Male: Length of forewing, 2 mm. Color of wings in alcohol grayish brown, mottled. Male genitalia: Ninth segment with anterolateral projection short, slightly upturned. Tenth tergum membranous, quadrangular in lateral aspect, apex slightly incised. Subgenital plate broad, parallel-sided in ventral aspect, emarginate in lateral aspect; bearing a large spine at each posterolateral corner and a small triangular process anterior of spine. Bracteole transparent, long, narrow, slightly upturned with several setae on dorsal and ventral margins. Clasper half length of bracteole, apical half dark brown, narrow, tip rounded, basal half broad, with dark, heavily sclerotized, mushroom-shaped inner structure. Phallus with spiral process, and two dark, stout, inner spines almost completely covered by tubular membranous envelope.

**Type specimens.**—Holotype, male (FSCA): GRENADA, PARISH ST. ANDREWS: Balthazar Estate, 1 June 1990, J. H. Frank, A. Thomas. Paratypes: Same

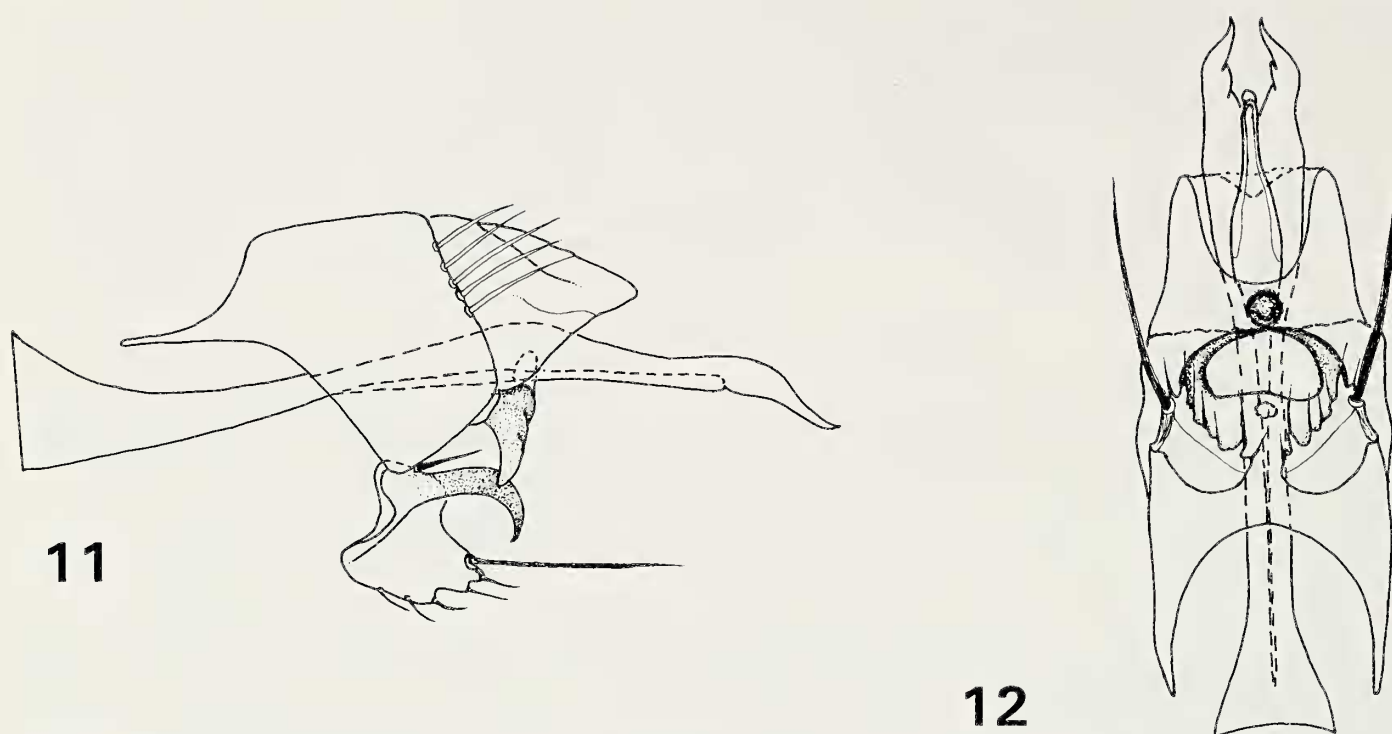


Fig. 11–12.—*Bredinia appendiculata*, n. sp., male genitalia: 11, left lateral view; 12, ventral view.

data, 3 males and 7 females (FSCA); same, 12 June 1990, 1 male and 1 female (NMNH); Mirabeau Agricultural Laboratory, 29 Jan. 1990, A. Thomas, J. Telesford, 1 female (FSCA); same, 1 Feb. 1990, A. Thomas, 1 male and 1 female (CMNH). PARISH ST. JOHNS: Black Bay, 26 Feb. 1990, R. E. Woodruff et al., 1 male (FSCA); Concord Falls, 20 Feb. 1990, R. E. Woodruff et al., 1 female (FSCA).

*Etymology*.—Greek: “islander,” referring to the habitat of this species.

*Remarks*.—This species is a member of the “*Exitrichia*” species group, related to *N. pequenita* Botosaneanu.

#### *Neotrichia tauricornis* Malicky

This species, which was described from the island of Guadeloupe, has been recorded from Martinique (Botosaneanu, 1989, 1990a) and recently from Colombia (Flint, 1991). Its presence on Grenada and St. Lucia is not surprising.

*Material*.—GRENADA, PARISH ST. ANDREWS: Mirabeau Agricultural Laboratory, 31 Jan. 1990, M. Thomas, 1 male and 1 female (FSCA); Windsor Estate, 6 March 1990, R. E. Woodruff et al., 1 male (FSCA). ST. LUCIA, QUARTER ANSE LA RAYE: 1 km SSW Anse La Raye (13°56'N, 61°03'W), 50 m, 21–30 June 1991, J. E. Rawlins, S. A. Thompson, 1 male (CMNH).

#### *Bredinia appendiculata*, new species

Fig. 11–12

*Diagnosis*.—From all known species *B. appendiculata* is easily distinguished by the very strong midventral hook of the subgenital plate, the long, pointed and mesally curved dorsal process of the clasper, and the broad, apical, caliper-like processes of the phallus.

*Description*.—Male: Length of forewing, 1 mm. Color in alcohol, fuscous, immaculate. Male genitalia: Ninth segment with anterolateral apodemes shorter than segment, broad basally. Tenth tergum in lateral aspect triangular and membranous, in dorsal aspect truncate apically. Subgenital plate hooklike, apex directed ventrad and bluntly pointed. Clasper trianguloid, ventral margin undulate,



setose, bearing apically a long, slender spine; dorsal portion sickle-shaped, pointed and curving ventromesally. Phallus tubular, apically divided into a bottle-shaped central tube flanked by broad, caliper-like processes surpassing central tube.

*Type specimen.*—Holotype, male (FSCA); GRENADA, PARISH ST. ANDREWS: Balthazar Estate, 1 June 1990, J. H. Frank, A. Thomas.

*Etymology.*—Latin: “with an appendix”, referring to a distinct, curved dorsal process of the clasper.

*Remarks.*—This, the second species described in the genus *Bredinia*, is similar to the type species (*B. dominicensis*) from Dominica. Studies underway with S. Harris show that the genus is also widespread and diverse (an additional eight species are known) on the continent.

### *Oxyethira azteca* Mosely

This species has been recorded from Grenada from two localities: two miles west of Grand Etang and Balthazar (Flint, 1968). Two very similar species have been confused under the name *O. azteca* (Flint and Reyes, 1991). Both lots were restudied in light of this and both have been confirmed to be *O. azteca*.

### *Oxyethira janella* Denning

This hydroptilid species is found from the southern United States, throughout Central America and northern South America, and on most of the islands of the Antillean Archipelago including Barbados (Botosaneanu, 1990a; Flint, 1968).

*Material.*—GRENADA, PARISH ST. ANDREWS: Mirabeau Agricultural Laboratory, 8 June 1990, J. Telesford, 1 male; Balthazar Estate, 12 June 1990, J. H. Frank, A. Thomas, 1 male; Windsor Estate, 6 March 1990, R. E. Woodruff et al., 2 males; Pearls Airport Area, 460 meters behind beach, 8 March 1990, R. E. Woodruff et al., 2 females. PARISH ST. JOHNS: Clozier, 27 Sept. 1990, R. E. Woodruff et al., 1 male (all in FSCA).

### *Orthotrichia tega* Flint

Malicky (1983) recorded an unidentified species of *Orthotrichia* from Guadeloupe on the basis of nine females. He made available to the senior author several examples for study. They are identified as *Oxyethira tega* Flint. This species has minute ocelli, and occasionally even appears to lack them. This condition leads to misidentification. Malicky (1983) reported males of *Oxyethira tega* from his collection. The genus *Orthotrichia* should be deleted from the list of Lesser Antillean caddisflies, pending a new discovery.

### *Hydroptila grenadensis* Flint

This species was described by Flint (1968) from Grenada, where it is frequently collected. It has recently been recorded from the continent in Panama, Colombia, Ecuador, Peru, and on Trinidad (Flint and Reyes, 1991).

*Material.*—GRENADA, PARISH ST. ANDREWS: Mirabeau Agricultural Laboratory, 28 Jan. 1990, J. Telesford, 1 male; same, 1 Feb. 1990, A. Thomas, 4 males; same, 6 March 1990, H. Thomas, 2 males; same, 13 March 1990, J. Telesford, 1 male and 1 female; same, 8 April 1990, J. Telesford, 2 males and 2 females; road end at Mt. St. Catherine, 22 Feb. 1990, R. E. Woodruff et al., 1 male; Windsor Estate, 6 March 1990, R. E. Woodruff et al., 1 male; Pearls Airport Area, 460 meters behind beach, 8 March 1990, R. E. Woodruff et al., 2 males and 3 females (all in FSCA); Grand Etang, 23–24 Oct. 1975, E. L. Todd, 1 male (NMNH).

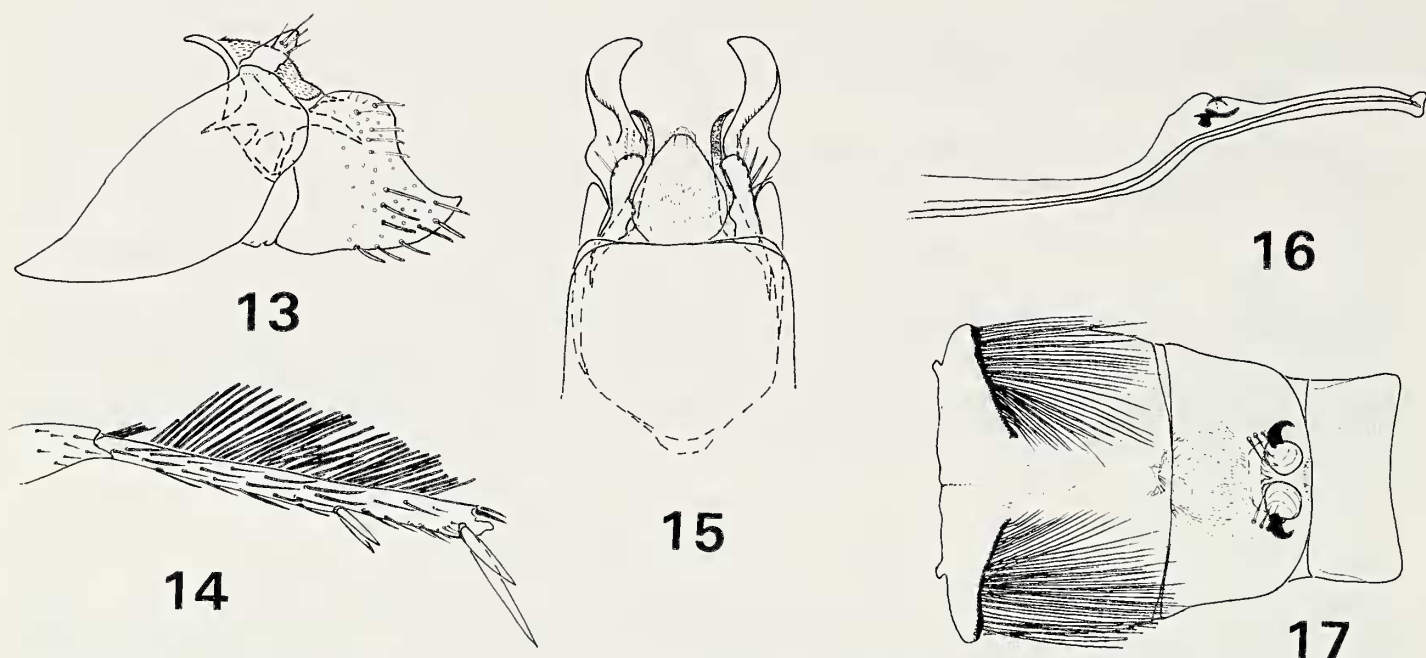


Fig. 13–17.—*Ochrotrichia* (*Metrichia*) *rawlinsi*, n. sp., 13, male genitalia, left lateral view; 14, midtibia, left lateral view; 15, male genitalia, dorsal view; 16, phallus, dorsal view; 17, posterior segments of abdomen, dorsal view.

*Ochrotrichia* (*O.*) *ponta* Flint

This species was described from Dominica, and recently recorded from Martinique and St. Vincent (Botosaneanu, 1990a). It is a new record for Grenada.

*Material*.—GRENADA, PARISH ST. ANDREWS: Road end at Mt. St. Catherine, 22 Feb. 1990, R. E. Woodruff et al., 1 male and 1 female (all in FSCA).

*Ochrotrichia* (*O.*), species

Dr. Malicky presented the senior author a female specimen of this genus and subgenus which was taken on Guadeloupe. Its genitalia are not similar to those of any other female *Ochrotrichia* (*O.*) described from the Lesser Antilles. It most likely represents an otherwise unknown species of the genus. It is recorded here to call attention to the occurrence of the typical subgenus on that island.

*Material*.—GUADELOUPE: Rivière Laurant, near Belleville, 8 Apr. 1979, Starmuhlner and Therzien, 1 female (NMNH).

*Ochrotrichia* (*Metrichia*) *rawlinsi*, new species

Fig. 13–17

*Diagnosis*.—This species differs from all known species of this subgenus mainly by bearing sclerotized “hooks” and membranous pouches on the sixth abdominal tergum and by the shape of the clasper with its distinct dorsal lobe and in the armature of the phallus.

*Description*.—Male: Length of forewing, 1.8 mm. Color of specimen in alcohol fuscous, with yellowish legs. Midtibia with a dense fringe of long, black, blunt hairs. Abdomen brownish with sixth and seventh terga constricted; a pair of dense, black hair tufts on the fifth tergum originating from the anterior section and covering most of the rest of the segment; sixth tergum small and trapezoidal with a pair of heavily sclerotized, black hooks attached to membranous pouches; seventh tergum small, butterfly-shaped. Male genitalia: Ninth segment in lateral aspect almost trapezoidal with anteroventral angle produced. Cercus short, semioval. Tenth tergum triangular in lateral aspect, covered with short spiculae; dorsolateral hook arising from a palmate, sclerotized base, produced into a long spine directed posteriad and curved slightly ventrad. Clasper broad, triangular with relatively prominent, rounded



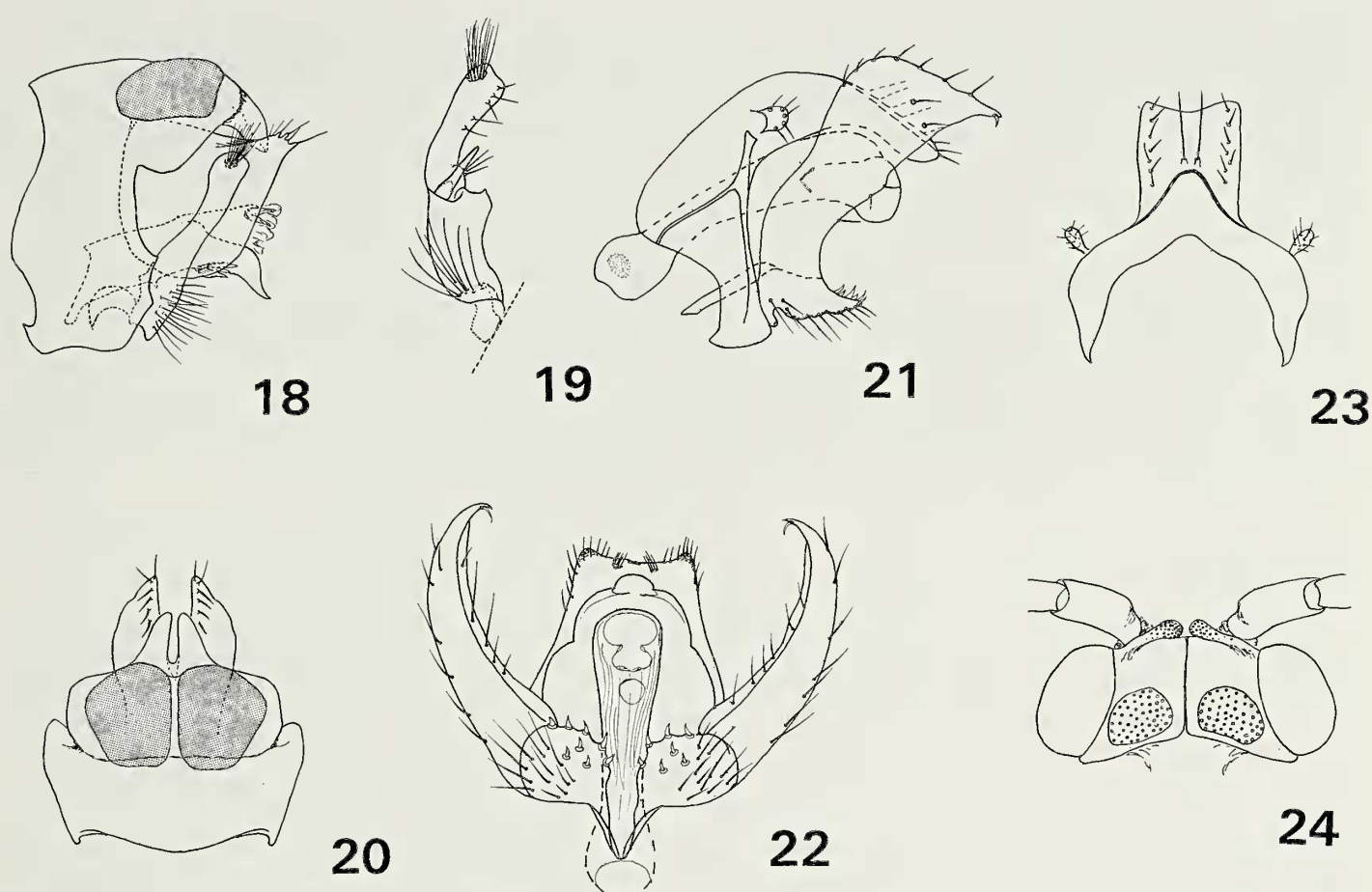


Fig. 18–24.—*Amphoropsyche woodruffi*, n. sp., male genitalia: 18, left lateral view; 19, clasper, posteroventral view; 20, ninth and tenth terga, dorsal view. 21–24.—*Helicopsyche grenadensis*, n. sp., male genitalia: 21, left lateral view; 22, posterior view; 23, ninth and tenth terga and cerci, dorsal view; head: 24, dorsal view.

dorsal lobe and pointed apicoventral lobe. Phallus with expanded base, bent sharply at  $\frac{1}{4}$  distance from apex, with dark, sclerotized hook in bend, apex membranous with sclerotized central tubule.

*Type specimen*.—Holotype, male (CMNH); DOMINICA, PARISH ST. PAUL, Springfield Estate, 2.6 km ENE Canefield ( $15^{\circ}21'N$ ,  $61^{\circ}22'W$ ), 480 m, 13 June 1991, J. E. Rawlins, S. A. Thompson.

*Etymology*.—Named in honor of Dr. John E. Rawlins, Carnegie Museum of Natural History, who collected this species in Dominica.

*Remarks*.—This species is related to *O. (M.) exclamationis* Flint which is known only from Dominica.

#### *Oecetis pratti* Denning

This is the first record of the genus from Grenada. It was previously reported from Puerto Rico and Dominica (Flint, 1968).

*Material*.—GRENADA, PARISH ST. ANDREWS: Grand Etang, 23 Oct.–1 Nov. 1975, E. L. Todd, 6 females (NMNH).

#### *Amphoropsyche woodruffi*, new species

Fig. 18–20

*Diagnosis*.—Distinguished by the divided apico mesal process of the cerci and by short second segment of the clasper. The mesal lobe of the clasper is small, blunt and angled from caudal view.

*Description*.—Male: Length of forewing, 4.5 mm. Color in alcohol pale stramineous; hindwings with

both a strong, dark, basal hair-pencil and a fringe of long, dark hairs along posterior margin. Male genitalia: Ninth segment annular, anterior margin slightly sinuous. Cerci broad, fused mesally, apicomesally produced into a decumbent, lightly-sclerotized lobe, divided mesally from opposing lobe; internal amphora roughly elongate, oval. Tenth tergum divided to base mesally, lateral lobe very broad in lateral aspect, ventral margin rounded, apicodorsal margin with apex slightly produced and bearing a few spinous setae. Clasper with basal segment elongate, club-shaped in lateral aspect, with apical tuft of setae; in posteroventral aspect, inner margin of basal section broadly produced apicad with a small apical angle, second segment elongate, pointed, barely half length of apical section of first segment. Phallus with tubular phallobase; apex with a ventromesal process, pointed and angled ventrad in lateral aspect and bearing near base several spines on each side, dorsal portion membranous with a phallotremal sclerite, V-shaped in lateral aspect.

*Type specimen.*—Holotype, male (FSCA); GRENADA, PARISH ST. JOHNS: Concord Falls, 20 Feb. 1990, R. E. Woodruff et al.

*Etymology.*—Named in honor of Dr. R. E. Woodruff, Florida Department of Agriculture, who collected this new species on Grenada.

*Remarks.*—This species is most similar to *A. aragua* Holzenthal, although it is abundantly distinct in the various structures of the male genitalia. With *A. aragua* it shares the very broad, ventrally rounded tenth tergum which is not divided into two subequal processes. In *A. aragua* the cerci are fused and bear a single heavily-sclerotized apicomesal process, while in *A. woodruffi* the apicomesal process is divided mesally, very lightly sclerotized, and the tip is rounded. The second segment of the clasper is very long, almost attaining the apex of the first segment and the mesal lobe is produced into a strong, elongate point in *A. aragua*; in *A. woodruffi* the second segment is barely half the length apical portion of the first segment, and the mesal lobe is short and blunt.

#### *Helicopsyche margaritensis* Botosaneanu

This is a new record for Grenada. This species was previously known only from the Island of Margarita off the coast of Venezuela. Although characters of this example duplicate the illustrations of *H. margaritensis*, there are examples intermediate between it and *H. vergelana* Ross in many mainland populations in Panama, Colombia, Ecuador, Peru, and Venezuela. The resolution of species limits in this complex will require a careful revision of all the specimens and types that can be found.

*Material.*—GRENADA, PARISH ST. ANDREWS: Balthazar Estate, 12 June 1990, J. H. Frank, A. Thomas, 4 males and 1 female. PARISH ST. JOHNS: Grenville Vale, 3 Oct. 1990, R. E. Woodruff et al., 1 male and 1 female (all in FSCA).

#### *Helicopsyche guadeloupensis* Malicky

*Helicopsyche*, species 1: Flint, 1968:78 [new synonymy].

*Helicopsyche*, species 2: Flint, 1968:79 [probable synonym].

Originally described from Guadeloupe (Malicky, 1980), the species has since been recorded from Martinique (Botosaneanu, 1988, 1990a). Recent collections have uncovered it on St. Lucia. It is thus probable that the species recorded from St. Lucia (Flint, 1968), on the basis of a male without abdomen and some larvae, is this species. Certainly the larvae figured by Flint (1968:fig. 231) from St. Lucia and by Botosaneanu (1988:fig. 37) from Martinique are probably the same species. With the presence of *H. guadeloupensis* on both sides of Dominica confirmed, the single female recorded from that island as *Helicopsyche* species 1 (Flint, 1968) has been reexamined. The abdomen of that specimen is identical to the abdomens of females from St. Lucia and Martinique.



*Material.*—ST. LUCIA, QUARTER OF ANSE LA RAYE, Anse Galet, 1 km SSW Anse La Raye (13°56'N, 61°03'W), 21–30 June 1991, J. E. Rawlins, S. A. Thompson, 1 male and 1 female (CMNH). DOMINICA, Clarke Hall, 21–31 Jan. 1965, W. W. Wirth, light trap, 1 female (*Helicopsyche* sp. 1 of Flint, 1968) (NMNH). MARTINIQUE, Rivière Blanche au Pont d'Alma, 20 and 24 Feb. 1986, Botosaneanu, 1 male and 1 female (NMNH).

***Helicopsyche grenadensis*, new species**  
Fig. 21–24

*Diagnosis.*—This species is a member of the *H. haitiensis* group, and is closely related to the Dominican species *H. apicauda* Flint. From the latter species it is most easily distinguished by the shape of the clasper, in which the dorsal margin is not so strongly rounded and the mesobasal lobe is shorter and pointed in lateral aspect.

*Description.*—Male: Length of forewing, 3 mm. Color in alcohol pale brown, unicolorous. Head with anteromesal setal warts borne on slender, cylindrical, mesally-directed processes. Third and fourth sterna reticulate, fifth sternum with a few basal reticulations; sixth sternum with a midventral process as long as sternum. Male genitalia: Ninth segment with anterior margin strongly produced laterally; lateral brace angled anteroventrally. Cercus small, oval, located slightly above lateral brace. Tenth tergum extending slightly beyond clasper in lateral aspect; in dorsal aspect parallel-sided, apex shallowly emarginate, with a row of setae along each side, with a basal V-shaped dark mark not extending down dorsum but bearing a pair of large, posteriorly-directed setae near midline. Clasper narrow, in lateral aspect dorsolateral lobe slightly bent near middle, narrowed above mesobasal lobe, anterodorsal angle rounded, posterodorsal angle produced into a point; mesobasal lobe fused to lateral lobe, pointed in lateral aspect, broad and rounded in posteroventral aspect, covered with short spines. Phallus only slightly curved, enlarged basally and apically; apex membranous with a darkened, internal phallotremal sclerite.

*Type specimens.*—Holotype, male (FSCA): GRENADA, PARISH ST. ANDREWS: Clabony, 12 Oct. 1990, R. E. Woodruff, A. Thomas. Paratypes (NMNH): Same data, 1 male and 1 female.

*Etymology.*—Latin: “from Grenada,” referring to the island where this species was collected.

*Remarks.*—The functional and taxonomic significance of the odd anteromesal setal wart of the head in this species is difficult to assess (Fig. 24). The heads of *H. vergelana* and *H. guadeloupensis* also possess this structure. Possibly it is present universally in the genus and is of no particular specific significance.

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